P25880.A08

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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| Applicants | : | Yasunori MIKI et al. | Confirmation No. 8270 |
| Appln. No. | : | 10/505,453 | Examiner: M. A. Elve |
| Filed | : | September 1, 2004 | Group Art Unit: 1725 |
| For | : | A CONTACT FOR A CONNECTOR AND A MANUFACTURING METHOD OF AN ELEMENT TO BE SOLDERED | |

**APPEAL BRIEF UNDER 37 C.F.R. § 41.37**

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop Appeal Brief-Patents
Randolph Building
401 Dulany Street
Alexandria VA 22314

Sir:

This appeal is from the Examiner's final rejection of claims 1 and 6-22 as set forth in the Final Official Action dated July 14, 2008.

A Notice of Appeal in response to the Final Official Action of July 14, 2008 along with a Request for Extension of Time for one month was filed on November 13, 2008. The two month statutory period for response was set to expire on January 13, 2009. Further, the instant Appeal Brief is being submitted together with payment including the requisite fee under 37 C.F.R. § 41.20(b)(2) in the amount of $540.00 for the filing of the Appeal Brief.

However, if any extension of time is necessary, this is an express request for any necessary extension of time and authorization to charge any required extension of time fee or any other fees which may be required to preserve the pendency of the present application to Deposit Account No. 19-0089.

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## (1) REAL PARTY IN INTEREST

The real party in interest is Panasonic Electric Works Co., Ltd. (formerly Matsushita Electric Works, Ltd.), as established by an assignment recorded in the United States Patent and Trademark Office on September 1, 2004 at Reel 016236, Frame 0377.

## (2) RELATED APPEALS AND INTERFERENCES

Appellant is presently not aware of any other appeals and/or interferences which will directly affect or be affected by or have a bearing on the Board's decision in the present Appeal.

**(3) STATUS OF THE CLAIMS**

Claims 1, 6-16, and 20-22 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by SAITO et al. (U.S. Patent No. 6,712,625).

Claim 1 stands finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Document JP 5-90835.

Claim 1 stands finally rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736).

Claims 6-16 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Document JP 5-90835 in view of Japanese Patent Document JP 60-238489.

Claims 6-16 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736) in view of Japanese Patent Document JP 60-238489.

Claims 17-19 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over SAITO et al. (U.S. Patent No. 6,712,625) in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

Claims 6-22 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Document JP 5-90835 in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

Claims 6-22 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736) in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

Claims 1 and 6-22 are on appeal.

**(4) STATUS OF THE AMENDMENTS**

A Request for Reconsideration under 37 C.F.R. § 1.116 was filed on October 14, 2008. No amendments were filed under 37 C.F.R. § 1.116 after the Examiner's final rejection of claims by the Final Official Action of July 14, 2008.

## (5) SUMMARY OF THE CLAIMED SUBJECT MATTER

The summary below is intended as a nonlimiting example of the claimed invention, and no estoppel should be deemed to extend therefrom.

Claim 1 is directed to a contact 1 for a connector 100 (figure 1A; specification, page 9, lines 7-11) including a terminal portion 2 (figures 1A, 2, and 3; specification, page 9, lines 12-16) provided in the vicinity of an end and a contacting portion 3 (figures 1A, 2, and 3; specification, page 9, lines 12-16) provided in the vicinity of the other end of the contact 1, which are formed by processing a metal material into a predetermined shape (specification, page 9, lines 12-16); a foundation nickel plating layer 7 (figure 14; specification, page 19, lines 10-11) and a gold plating layer 4, 5 (figure 2; specification, page 9, lines 17-22), 8 (figure 13A, 13B, and 14; specification, page 19, lines 8-13) or a metal alloy plating layer including gold 8a (figures 13B and 14; specification, page 19, lines 8-13), which are formed on substantially entire surface of the contact 1 including the terminal portion 2 and the contacting portion 3 (figure 2; specification, page 9, lines 16); and a diffusion preventing area 6 (figure 2) formed between the terminal portion 2 and the contacting portion 3 by irradiating laser beams L (figure 13A) on the gold plating layer or the metal alloy plating layer including gold (specification, page 9, lines 17-22; and page 19, lines 1-7), which has low wetting property with respect to solder so that melted solder rarely diffuses thereon (specification, page 9, line 17 through page 10, line 13), wherein the diffusion preventing area 6 has the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer

which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel (figures 13A, 13B, and 14; specification, page 19, line 8 through page 20, line 15).

Claim 6 is directed to a manufacturing method of an element 1 to be soldered including processing a metal material into a predetermined shape in a manner so that a terminal portion 2 is formed in the vicinity of an end of the element1 (figures 1A, 2, and 3; specification, page 9, lines 7-16); forming a foundation nickel plating layer 7 and a gold plating layer 4, 5 (figure 2; specification, page 9, lines 17-22), 8 (figure 13A, 13B, and 14; specification, page 19, lines 8-13) or a metal alloy plating layer including gold 8a (figures 13B and 14; specification, page 19, lines 8-13) on substantially entire surface of the element 1 including the terminal portion 2; and forming a diffusion preventing area 6 (figure 2), which has the foundation nickel plating layer 7 unsheathed due to evaporation and removal of at least a part of gold 8 or metal alloy including gold 8a, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel (figures 13A, 13B, and 14; specification, page 19, line 8 through page 20, line 15), and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams L (figure 13A) on the gold plating layer 8 or the metal alloy plating layer including gold 8a at a portion between the terminal portion and a portion not to be soldered in the air (specification, page 9, lines 17-22; and page 19, lines 1-7).

**(6) GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 1, 6-16, and 20-22 stand finally rejected under 35 U.S.C. § 102(b) as being anticipated by SAITO et al. (U.S. Patent No. 6,712,625).

Claim 1 stands finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Document JP 5-90835.

Claim 1 stands finally rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736).

Claims 6-16 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Document JP 5-90835 in view of Japanese Patent Document JP 60-238489.

Claims 6-16 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736) in view of Japanese Patent Document JP 60-238489.

Claims 17-19 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over SAITO et al. (U.S. Patent No. 6,712,625) in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

Claims 6-22 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over Japanese Patent Document JP 5-90835 in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

Claims 6-22 stand finally rejected under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736) in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773).

Claims 1 and 6-22 are on appeal.

(7) **ARGUMENT**

**(A) The rejection of claims 1 and 6-16 and 20-22 under 35 U.S.C. § 102(b) as being anticipated by SAITO et al. (U.S. Patent No. 6,712,625) is improper, and the decision to reject claims 1 and 6-22 on this ground should be reversed.**

**Independent Claim 1:**

Appellant's claimed contact for a connector provides a terminal portion, a contacting portion, and a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, *SAITO et al. does not disclose (2) at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel, (2-2) a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and (2-3) a metal alloy layer which is formed of evaporation and removal of at least a portion of gold and alloying the remaining gold and nickel.* In this regard, the SAITO et al. patent discloses that (A) the poorly wettable primer plating layer is formed by selectively removing a portion of the finish plating layer at the terminal section 111 and serves as an arresting region; (B) the exposed surface region of the base member is preferably copper or a copper alloy Cu--Ni; and (C) the finish plating material applied to the surface of the contact 11 is preferably gold, tin, or a tin alloy.

Accordingly, the poorly wettable primer plating layer of SAITO et al., which corresponds to the diffusion preventing area of the instant invention, has *only* the feature of the foundation plating layer unsheathed due to evaporation and the removal of at least a portion of gold. Therefore, the SAITO et al. patent discloses the diffusion preventing area having *only* the foundation plating layer unsheathed due to evaporation (*i.e.*, only a portion of *(1)* described above). SAITO et al. does not disclose *(2)* described above.

The Examiner has taken the position that poor wettability and diffusion prevention are functional equivalents (see the Response to Arguments section of the Final Official Action mailed July 14, 2008). The Examiner has also taken the position that the poor wettability region of the SAITO et al. device is formed by selective removal of the plating layers using laser beam machining; that SAITO et al. discloses nickel and gold layers that are removed; and that poor wettability, diffusion prevention, and an arresting region are the same since they all prevent adhesion of material by diffusion (see the Response to Arguments section of the Final Official Action mailed July 14, 2008).

However, contrary to the Examiner's assertions, Appellant respectfully points out that the SAITO et al. patent does not disclose the claimed device. In particular, in Appellant's claimed device, the diffusion preventing area has *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold; and *(2)* at least one selected from: *(2-1)* a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removal of at least a part of the gold and alloying the remaining gold and nickel.

However, the SAITO et al. patent does not disclose the claimed device. In particular, the SAITO et al. patent discloses the following: (A) a poorly wettable primer plating layer formed by selectively removing a portion of the finish plating layer at the terminal section 111 and serving as an arresting region (as described in the SAITO et al. abstract); (B) an exposed surface region of the base member is preferably copper or a copper alloy Cu-Ni; and (C) a finish plating material applied to the surface of the contact 11 is preferably gold, tin, or a tin alloy.

SAITO et al. discloses a gold plating layer, for example, in column 8, line 52 (the gold plating layer). *However, SAITO et al. does not disclose the use of metal alloy including gold as a finishing plating layer, so that it is impossible to form (2-2) (i.e., a diffusion layer formed of diffusing a material except gold of the metal alloy including gold) and (2-3) (i.e., a metal alloy layer which is formed of evaporation and removal of at least a part of the gold and alloying the remaining gold and nickel).*

Accordingly, the SAITO et al. patent does not disclose a contact for a connector including, inter alia, a terminal portion, a contacting portion, and "a diffusion preventing area formed between the terminal portion and the contacting portion by irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold, which has low wetting property with respect to solder so that melted solder rarely diffuses thereon, wherein the diffusion preventing area has the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel", as set forth in claim 1.

For at least all of the above reasons, Appellant submits that the rejection of claim 1 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the teachings of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 1 under 35 U.S.C. § 102(b) be reversed.

**Independent Claim 6:**

Appellant's claimed manufacturing method of an element provides processing a metal material so that a terminal portion is formed, forming a foundation nickel plating layer and a gold plating layer or a metal alloy plating layer including gold; and forming a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, *SAITO et al. does not disclose forming a diffusion preventing area including (2) at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel, (2-2) a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and (2-3) a metal alloy layer which is formed of evaporation and removal of at least a portion of gold and alloying the remaining gold and nickel.* In this regard, the SAITO et al. patent discloses that (A) the poorly wettable primer plating layer is formed by selectively removing a portion of the finish plating layer at the terminal section 111 and serves as an arresting region; (B) the exposed surface region of the base member is preferably copper or a

copper alloy Cu--Ni; and (C) the finish plating material applied to the surface of the contact 11 is preferably gold, tin, or a tin alloy.

Accordingly, the poorly wettable primer plating layer of SAITO et al., which corresponds to the diffusion preventing area of the instant invention, has *only* the feature of the foundation plating layer unsheathed due to evaporation and the removal of at least a portion of gold. Therefore, the SAITO et al. patent discloses forming a diffusion preventing area having *only* the foundation plating layer unsheathed due to evaporation (*i.e.*, only a portion of *(1)* described above). SAITO et al. does not disclose *(2)* described above.

The Examiner has taken the position that poor wettability and diffusion prevention are functional equivalents (see the Response to Arguments section of the Final Official Action mailed July 14, 2008). The Examiner has also taken the position that the poor wettability region of the SAITO et al. device is formed by selective removal of the plating layers using laser beam machining; that SAITO et al. discloses nickel and gold layers that are removed; and that poor wettability, diffusion prevention, and an arresting region are the same since they all prevent adhesion of material by diffusion (see the Response to Arguments section of the Final Official Action mailed July 14, 2008).

However, contrary to the Examiner's assertions, Appellant respectfully points out that the SAITO et al. patent does not disclose the claimed method. In particular, in Appellant's claimed method, the diffusion preventing area has *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold; and *(2)* at least one selected from: *(2-1)* a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and

*(2-3)* a metal alloy layer which is formed of evaporation and removal of at least a part of the gold and alloying the remaining gold and nickel.

However, the SAITO et al. patent does not disclose the claimed method. In particular, the SAITO et al. patent discloses the following: (A) a poorly wettable primer plating layer formed by selectively removing a portion of the finish plating layer at the terminal section 111 and serving as an arresting region (as described in the SAITO et al. abstract); (B) an exposed surface region of the base member is preferably copper or a copper alloy Cu-Ni; and (C) a finish plating material applied to the surface of the contact 11 is preferably gold, tin, or a tin alloy.

SAITO et al. discloses a gold plating layer, for example, in column 8, line 52 (the gold plating layer). *However, SAITO et al. does not disclose the use of metal alloy including gold as a finishing plating layer, so that it is impossible to form (2-2) (i.e., a diffusion layer formed of diffusing a material except gold of the metal alloy including gold) and (2-3) (i.e., a metal alloy layer which is formed of evaporation and removal of at least a part of the gold and alloying the remaining gold and nickel).*

Accordingly, the SAITO et al. patent does not disclose a manufacturing method of an element comprising processing a metal material so that a terminal portion is formed; and "forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal

alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air", as set forth in claim 6.

For at least all of the above reasons, Appellant submits that the rejection of claim 6 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the teachings of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 6 under 35 U.S.C. § 102(b) be reversed.

**Claim 7:**

Appellant submits that dependent claim 7, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 7 sets forth a manufacturing method in accordance with claim 6, wherein the diffusion preventing area is formed by unsheathing the foundation nickel plating layer owing to evaporation and removing at least a part of the gold or metal alloy including gold when laser beams are irradiated on the gold plating layer or the metal alloy plating layer including gold. However, in addition to SAITO et al. lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose unsheathing the foundation nickel plating layer owing to evaporation and removing at least a part of the gold or metal alloy including gold when laser beams are irradiated on the gold plating layer or the metal alloy plating layer including gold.

For at least all of these reasons, Appellant submits that the rejection of claim 7 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 7 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 8:**

Appellant submits that dependent claim 8, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 8 sets forth a manufacturing method in accordance with claim 6, wherein at least a part of the diffusion preventing area is a metal alloy layer formed of alloying gold and nickel at a portion irradiated by laser beams when the laser beams are irradiated on the gold plating layer. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose that at least a part of the diffusion preventing area is a metal alloy layer formed of alloying gold and nickel at a portion irradiated by laser beams when the laser beams are irradiated on the gold plating layer.

For at least all of these reasons, Appellant submits that the rejection of claim 8 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 8 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 9:**

Appellant submits that dependent claim 9, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 8 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein at least a part of the diffusion preventing area is a diffusion layer formed of diffusing a material except gold of the metal alloy on a surface at a portion irradiated by laser beams when the laser beams are irradiated on the

metal alloy plating layer. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein at least a part of the diffusion preventing area is a diffusion layer formed of diffusing a material except gold of the metal alloy on a surface at a portion irradiated by laser beams when the laser beams are irradiated on the metal alloy plating layer.

For at least all of these reasons, Appellant submits that the rejection of claim 9 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 9 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 10:**

Appellant submits that dependent claim 10, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 10 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein the diffusion preventing area is a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein the diffusion preventing area is a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.

For at least all of these reasons, Appellant submits that the rejection of claim 10 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 10 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 11:**

Appellant submits that dependent claim 11, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 11 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein a removing solution of gold is acted to the gold plating layer or the metal alloy plating layer including gold at a portion including at least an area where the laser beams will be irradiated, before irradiating the laser beams. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein a removing solution of gold is acted to the gold plating layer or the metal alloy plating layer including gold at a portion including at least an area where the laser beams will be irradiated, before irradiating the laser beams.

For at least all of these reasons, Appellant submits that the rejection of claim 11 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 11 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 12:**

Appellant submits that dependent claim 12, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 12 sets forth a manufacturing method of the

element to be soldered in accordance with claim 6, wherein a removing solution of gold is acted on the gold plating layer or the metal alloy plating layer including gold at a portion including at least an area where the laser beams were irradiated, after irradiating the laser beams. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein a removing solution of gold is acted on the gold plating layer or the metal alloy plating layer including gold at a portion including at least an area where the laser beams were irradiated, after irradiating the laser beams.

For at least all of these reasons, Appellant submits that the rejection of claim 12 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 12 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 13:**

Appellant submits that dependent claim 13, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 13 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein the foundation plating layer is a nickel plating layer. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein the foundation plating layer is a nickel plating layer.

For at least all of these reasons, Appellant submits that the rejection of claim 13 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 13 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 14:**

Appellant submits that dependent claim 14, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 14 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein a palladium-nickel alloy plating layer formed on the foundation nickel plating layer. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose a palladium-nickel alloy plating layer formed on the foundation nickel plating layer.

For at least all of these reasons, Appellant submits that the rejection of claim 14 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 14 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 15:**

Appellant submits that dependent claim 15, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 15 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein the metal alloy including gold is a gold-nickel alloy. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein the metal alloy including gold is a gold-nickel alloy.

For at least all of these reasons, Appellant submits that the rejection of claim 15 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 15 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 16:**

Appellant submits that dependent claim 16, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 16 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein the laser beams are irradiated at a portion in the vicinity of the terminal portion. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein the laser beams are irradiated at a portion in the vicinity of the terminal portion.

For at least all of these reasons, Appellant submits that the rejection of claim 16 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 16 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 20:**

Appellant submits that dependent claim 20, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 20 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, the laser beams have a beam spot diameter larger than a predetermined width of the diffusion preventing area necessary for preventing diffusion of melted solder, and the laser beams are irradiated with sifting a predetermined pitch

in a predetermined direction so as to form overlapping portion of adjoining nuggets, and the width of the overlapping portion is wider than a predetermined width necessary for preventing the diffusion of melted solder. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose the laser beams have a beam spot diameter larger than a predetermined width of the diffusion preventing area necessary for preventing diffusion of melted solder, and the laser beams are irradiated with sifting a predetermined pitch in a predetermined direction so as to form overlapping portion of adjoining nuggets, and the width of the overlapping portion is wider than a predetermined width necessary for preventing the diffusion of melted solder.

For at least all of these reasons, Appellant submits that the rejection of claim 20 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 20 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 21:**

Appellant submits that dependent claim 21, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 21 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein the element to be soldered is conveyed as a state of semi-finished blank in which a plurality of the elements is arranged at a predetermined pitch on a side of band metal plate; and the laser beams are irradiated to two sides of the element to be soldered in a section parallel to a conveying direction of the semi-finished blank in a direction having a predetermined angle except 90 degrees with respect to the

conveying direction of the semi-finished blank. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein the element to be soldered is conveyed as a state of semi-finished blank in which a plurality of the elements is arranged at a predetermined pitch on a side of band metal plate; and the laser beams are irradiated to two sides of the element to be soldered in a section parallel to a conveying direction of the semi-finished blank in a direction having a predetermined angle except 90 degrees with respect to the conveying direction of the semi-finished blank.

For at least all of these reasons, Appellant submits that the rejection of claim 21 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 21 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**Claim 22:**

Appellant submits that dependent claim 22, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 22 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein the element to be soldered is a contact for a connector, and a contacting portion is formed in the vicinity of an opposite end of the terminal portion. However, in addition to lacking disclosure of the subject matter of claim 1, SAITO et al. also fails to disclose wherein the element to be soldered is a contact for a connector, and a contacting portion is formed in the vicinity of an opposite end of the terminal portion.

For at least all of these reasons, Appellant submits that the rejection of claim 22 under 35 U.S.C. § 102(b) over SAITO et al. is improper and unsupported by the disclosure of SAITO et al.

Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 22 under 35 U.S.C. § 102(b) over SAITO et al. be reversed.

**(B) The rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over JP (5-90835) is improper, and the decision to reject claim 1 on this ground should be reversed.**

**Independent Claim 1:**

Appellant's claimed contact for a connector provides a terminal portion, a contacting portion, and a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, Appellants note that JP '835 fails to teach or suggest the subject matter claimed in claim 1. In this regard, the JP 5-90835 document fails to teach or suggest a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Appellants submit that nothing in the applied prior art teaches or suggests the claimed combination including, inter alia, a diffusion preventing area "wherein the diffusion preventing area has the foundation nickel plating layer unsheathed owing to evaporation and removing of at

least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel", as set forth in claim 1.

Accordingly, Appellants submit that a factual basis for the rejection has not been established and thus a prima facie case of obviousness has not been established, and that rejection of claim 1 under 35 U.S.C. § 103(a) can only result from a review of Appellants' disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 1 under 35 U.S.C. § 103(a) over JP '835 is improper for all the above reasons and withdrawal thereof is respectfully requested.

**(C) The rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736) is improper, and the decision to reject claim 1 on this ground should be reversed.**

**Independent Claim 1:**

Appellant's claimed contact for a connector provides a terminal portion, a contacting portion, and a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, Appellant notes that MORIUCHI et al. fails to teach or suggest the subject matter claimed in claim 1. In this regard, The MORIUCHI et al. patent does not disclose, teach, or suggest a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Appellant submits that nothing in the applied prior art teaches or suggests the claimed combination including, inter alia, a diffusion preventing area "wherein the diffusion preventing area has the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel", as set forth in claim 1.

Accordingly, Appellant submits that a factual basis for the rejection has not been established and thus a prima facie case of obviousness has not been established, and that rejection of claim 1 under 35 U.S.C. § 103(a) can only result from a review of Appellant's disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 1 under 35 U.S.C. § 103(a) over MORIUCHI et al. is improper for all the above reasons and withdrawal thereof is respectfully requested.

**(D) The rejection of claims 6-16 under 35 U.S.C. § 103(a) as being unpatentable over JP (5-90835) in view of JP (60-238489) is improper, and the decision to reject claim 1 on this ground should be reversed.**

**Claims 6-16:**

Appellant's claimed manufacturing method of an element provides processing a metal material so that a terminal portion is formed, forming a foundation nickel plating layer and a gold plating layer or a metal alloy plating layer including gold; and forming a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, Appellant notes that JP 5-90835 and JP 60-238489 fail to teach or suggest the subject matter claimed in claim 6. In this regard, JP 5-90835 fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Appellant submits that nothing in the applied prior art teaches or suggests the claimed combination including, inter alia, "forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part

of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air", as set forth in claim 6.

JP 60-238489 fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in claim 6.

Therefore, the JP 60-238489 document fails to cure the deficiencies of the JP 5-90835 device, and even assuming, arguendo, that the teachings of JP 5-90835 and JP 60-238489 have been properly combined, Appellant's claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35 U.S.C. § 103(a) over JP 5-90835 in view of JP 60-238489. Thus, the only reason to combine the teachings of JP 5-90835 and JP 60-238489 results from a review of Appellant's disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 6 under 35

U.S.C. § 103(a) over JP 5-90835 in view of JP 60-238489 is improper for all the above reasons and withdrawal thereof is respectfully requested.

**(E) The rejection of claims 6-16 under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. (U.S. Patent No. 5,957,736) in view of JP 60-238489 is improper, and the decision to reject claims 6-16 on this ground should be reversed.**

**Claims 6-16:**

Appellant's claimed manufacturing method of an element provides processing a metal material so that a terminal portion is formed, forming a foundation nickel plating layer and a gold plating layer or a metal alloy plating layer including gold; and forming a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, Appellant notes that MORIUCHI et al. and JP '489 fail to teach or suggest the subject matter claimed in claim 6. In this regard, it is noted that MORIUCHI et al. fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Appellant submits that nothing in the applied prior

art teaches or suggests the claimed combination including, inter alia, "forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air", as set forth in claim 6.

JP 60-238489 fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in claim 6.

Therefore, the JP 60-238489 document fails to cure the deficiencies of the MORIUCHI et al. method, and even assuming, arguendo, that the teachings of MORIUCHI et al. and JP 60-238489 have been properly combined, Appellant's claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35

U.S.C. § 103(a) over MORIUCHI et al. in view of JP 60-238489. Thus, the only reason to combine the teachings of MORIUCHI et al. and JP 60-238489 results from a review of Appellant's disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 6 under 35 U.S.C. § 103(a) over MORIUCHI et al. in view of JP 60-238489 is improper for all the above reasons and withdrawal thereof is respectfully requested.

**(F) The rejection of claims 17-19 under 35 U.S.C. § 103(a) as being unpatentable over SAITO et al. in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773) is improper, and the decision to reject claims 17-19 on this ground should be reversed.**

**Claim 17:**

Appellant submits that dependent claim 17, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 17 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein laser beams in a range from 0.5 to 5 mJ/pulse of the energy per one pulse and in a range from 100 to 2000 $mJ/mm^2$ of the energy per a unit area are used, which is neither taught nor suggested by SAITO et al. or HASHIMOTO et al. Further, Appellant respectfully submits that SAITO et al. fails to teach or suggest the subject matter of independent claim 6. Therefore, the HASHIMOTO et al. patent fails to cure the deficiencies of the SAITO et al. device, and even assuming, arguendo, that the teachings of SAITO et al. and HASHIMOTO et al. have been properly combined, Appellant's claimed manufacturing method would not have resulted from the combined teachings thereof.

For at least all of these reasons, Appellant submits that the rejection of claim 17 under 35 U.S.C. § 103(a) over SAITO et al. in view of HASHIMOTO et al. is improper and unsupported

by the teachings of SAITO et al. and HASHIMOTO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 17 under 35 U.S.C. § 103(a) over SAITO et al. in view of HASHIMOTO et al. be reversed.

**Claim 18:**

Appellant submits that dependent claim 18, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 17 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein laser beams in a range equal to or smaller than 3 mJ/pulse of the energy per one pulse and in a range equal to or smaller than 1200 $mJ/mm^2$ of the energy per a unit area are used, which is neither taught nor suggested by SAITO et al. or HASHIMOTO et al. Further, Appellant respectfully submits that SAITO et al. fails to teach or suggest the subject matter of independent claim 6. Therefore, the HASHIMOTO et al. patent fails to cure the deficiencies of the SAITO et al. device, and even assuming, arguendo, that the teachings of SAITO et al. and HASHIMOTO et al. have been properly combined, Appellant's claimed manufacturing method would not have resulted from the combined teachings thereof.

For at least all of these reasons, Appellant submits that the rejection of claim 18 under 35 U.S.C. § 103(a) over SAITO et al. in view of HASHIMOTO et al. is improper and unsupported by the teachings of SAITO et al. and HASHIMOTO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 18 under 35 U.S.C. § 103(a) over SAITO et al. in view of HASHIMOTO et al. be reversed.

**Claim 19:**

Appellant submits that dependent claim 19, which is at least patentable due to its dependency from claim 6 for the reasons noted above, recites additional features of the invention and is also separately patentable over the prior art of record based on the additionally recited features. In this regard, Appellant notes that claim 19 sets forth a manufacturing method of the element to be soldered in accordance with claim 6, wherein the laser beams have a wavelength equal to or shorter than 1100 nm, which is neither taught nor suggested by SAITO et al. or HASHIMOTO et al. Further, Appellant respectfully submits that SAITO et al. fails to teach or suggest the subject matter of independent claim 6. Therefore, the HASHIMOTO et al. patent fails to cure the deficiencies of the SAITO et al. device, and even assuming, arguendo, that the teachings of SAITO et al. and HASHIMOTO et al. have been properly combined, Appellant's claimed manufacturing method would not have resulted from the combined teachings thereof.

For at least all of these reasons, Appellant submits that the rejection of claim 19 under 35 U.S.C. § 103(a) over SAITO et al. in view of HASHIMOTO et al. is improper and unsupported by the teachings of SAITO et al. and HASHIMOTO et al. Therefore, Appellant respectfully requests that the decision of the Examiner to finally reject claim 19 under 35 U.S.C. § 103(a) over SAITO et al. in view of HASHIMOTO et al. be reversed.

**(G) The rejection of claims 6-16 under 35 U.S.C. § 103(a) as being unpatentable over JP 5-90835 in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773) is improper, and the decision to reject claims 6-16 on this ground should be reversed.**

**Claim 6-16:**

Appellant's claimed manufacturing method of an element provides processing a metal material so that a terminal portion is formed, forming a foundation nickel plating layer and a

gold plating layer or a metal alloy plating layer including gold; and forming a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, Appellant respectfully submits that JP 5-90835 and HASHIMOTO et al. fail to teach or suggest the subject matter claimed in claim 6. In this regard, JP 5-90835 fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Appellant submits that nothing in the applied prior art teaches or suggests the claimed combination including, inter alia, "forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer

including gold at a portion between the terminal portion and a portion not to be soldered in the air", as set forth in claim 6.

HASHIMOTO et al. fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in claim 6.

Therefore, the HASHIMOTO et al. document fails to cure the deficiencies of the JP '835 method, and even assuming, arguendo, that the teachings of JP '835 and HASHIMOTO et al. have been properly combined, Appellant's claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35 U.S.C. § 103(a) over JP '835 in view of HASHIMOTO et al. Thus, the only reason to combine the teachings of JP '835 and HASHIMOTO et al. results from a review of Appellant's disclosure and the application of impermissible hindsight. Accordingly, the rejection of claim 6 under 35 U.S.C. § 103(a) over JP '835 in view of HASHIMOTO et al. is improper for all the above reasons and withdrawal thereof is respectfully requested.

**(H) The rejection of claims 6-16 under 35 U.S.C. § 103(a) as being unpatentable over MORIUCHI et al. in view of in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773) is improper, and the decision to reject claims 6-16 on this ground should be reversed.**

**Claims 6-16:**

Appellant's claimed manufacturing method of an element provides processing a metal material so that a terminal portion is formed, forming a foundation nickel plating layer and a gold plating layer or a metal alloy plating layer including gold; and forming a diffusion preventing area. The diffusion preventing area includes *(1)* the foundation nickel plating layer unsheathed due to evaporation and removal of at least a portion of the gold or metal alloy including gold; and *(2)* at least one selected from the following: (2-1) a metal alloy layer formed of alloying gold and nickel; *(2-2)* a diffusion layer formed of diffusing a material except gold of the metal alloy including gold; and *(2-3)* a metal alloy layer which is formed of evaporation and removing at least a portion of the gold and alloying the remaining gold and nickel.

However, Appellant respectfully submits that MORIUCHI et al. and HASHIMOTO et al. fail to teach or suggest the subject matter claimed in claim 6. In this regard, MORIUCHI et al. fails to teach or suggest forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel. Thus, Appellant submits that nothing in the applied prior art teaches or suggests the claimed combination including, inter alia, "forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of

evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air", as set forth in claim 6.

HASHIMOTO et al. fails to teach or suggest a method including forming a diffusion preventing area including a foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, *and at least one of the following:* a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removal of at least part of gold and alloying the remaining gold and nickel, as recited in claim 6.

Therefore, the HASHIMOTO et al. document fails to cure the deficiencies of the MORIUCHI et al. method, and even assuming, arguendo, that the teachings of MORIUCHI et al. and HASHIMOTO et al. have been properly combined, Appellant's claimed manufacturing method of an element to be soldered would not have resulted from the combined teachings thereof.

Further, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 6 under 35 U.S.C. § 103(a) over MORIUCHI et al. in view of HASHIMOTO et al. Thus, the only reason to combine the teachings of MORIUCHI et al. and HASHIMOTO et al. results from a review of Appellant's disclosure and the application of impermissible hindsight. Accordingly, the

rejection of claim 6 under 35 U.S.C. § 103(a) over MORIUCHI et al. in view of HASHIMOTO et al. is improper for all the above reasons and withdrawal thereof is respectfully requested.

**(8) CONCLUSION**

The rejection of claims 1, 6-16, and 20-22 under 35 U.S.C. § 102(b) over SAITO et al. (U.S. Patent No. 6,712,625) is not supported by the evidence in the record and should therefore be reversed. Specifically, the SAITO et al. patent lacks any disclosure, teaching, or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel*

The rejection of claim 1 under 35 U.S.C. § 103(a) over Japanese Patent Document JP 5-90835 is not supported by the evidence in the record and should therefore be reversed. Specifically, JP 5-90835 and the prior art lack any disclosure, teaching or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel; a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.*

The rejection of claim 1 under 35 U.S.C. § 103(a) over MORIUCHI et al. (U.S. Patent No. 5,957,736) is not supported by the evidence in the record and should therefore be reversed. Specifically, MORIUCHI et al. and the prior art lack any disclosure, teaching, or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to*

*evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.*

The rejection of claims 6-16 under 35 U.S.C. § 103(a) over Japanese Patent Document JP 5-90835 in view of Japanese Patent Document JP 60-238489 is not supported by the evidence in the record and should therefore be reversed. Specifically, JP 5-90835 and JP 60-238489 lack any disclosure, teaching, or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.*

The rejection of claims 6-16 under 35 U.S.C. § 103(a) over MORIUCHI et al. (U.S. Patent No. 5,957,736) in view of Japanese Patent Document JP 60-238489 is not supported by the evidence in the record and should therefore be reversed. Specifically, MORIUCHI et al. and JP 60-238489 lack any disclosure, teaching, or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.*

The rejection of claims 17-19 under 35 U.S.C. § 103(a) over SAITO et al. (U.S. Patent No. 6,712,625) in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773) is not supported by the evidence in the record and should therefore be reversed. Specifically, SAITO et al. and HASHIMOTO et al. lack any disclosure, teaching, or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.*

The rejection of claims 6-22 under 35 U.S.C. § 103(a) over Japanese Patent Document JP 5-90835 in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773) is not supported by the evidence in the record and should therefore be reversed. Specifically, JP 5-90835 and HASHIMOTO et al. lack any disclosure, teaching, or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.*

The rejection of claims 6-22 under 35 U.S.C. § 103(a) over MORIUCHI et al. (U.S. Patent No. 5,957,736) in view of HASHIMOTO et al. (U.S. Patent No. 4,772,773) is not supported by the evidence in the record and should therefore be reversed. Specifically, MORIUCHI et al. and HASHIMOTO et al. lack any disclosure, teaching, or suggestion of a *diffusion preventing area having the foundation nickel plating layer unsheathed owing to*

*evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.*

Accordingly, Appellant respectfully requests that the Board reverse the decision of the Examiner to reject claims 1 and 6-22 under 35 U.S.C. §§ 102(b) and 103(a).

Thus, Appellant respectfully submits that each and every pending claim of the present application meets the requirements for patentability under 35 U.S.C. §§ 102(b) and 103(a), and that the present application and each pending claims are allowable over the prior art of record.

Should there be any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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## CLAIMS APPENDIX

1. A contact for a connector comprising:

a terminal portion provided in the vicinity of an end and a contacting portion provided in the vicinity of the other end of the contact, which are formed by processing a metal material into a predetermined shape;

a foundation nickel plating layer and a gold plating layer or a metal alloy plating layer including gold, which are formed on substantially entire surface of the contact including the terminal portion and the contacting portion; and

a diffusion preventing area formed between the terminal portion and the contacting portion by irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold, which has low wetting property with respect to solder so that melted solder rarely diffuses thereon, wherein

the diffusion preventing area has the foundation nickel plating layer unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.

6. A manufacturing method of an element to be soldered comprising:

processing a metal material into a predetermined shape in a manner so that a terminal portion is formed in the vicinity of an end of the element;

forming a foundation nickel plating layer and a gold plating layer or a metal alloy plating layer including gold on substantially entire surface of the element including the terminal portion; and

forming a diffusion preventing area, which has the foundation nickel plating layer unsheathed due to evaporation and removal of at least a part of gold or metal alloy including gold, and at least one selected among a metal alloy layer formed of alloying gold and nickel, a diffusion layer formed of diffusing a material except gold of the metal alloy including gold, and a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remaining gold and nickel, and has low wetting property with respect to solder so that the melted solder rarely diffuses thereon, owing to irradiating laser beams on the gold plating layer or the metal alloy plating layer including gold at a portion between the terminal portion and a portion not to be soldered in the air.

7. The manufacturing method of the element to be soldered in accordance with claim 6, wherein the diffusion preventing area is formed in a manner so that the foundation nickel plating layer is unsheathed owing to evaporation and removing of at least a part of gold or metal alloy including gold at a portion irradiated by laser beams when the laser beams are irradiated on the gold plating layer or the metal alloy plating layer including gold.

8. The manufacturing method of the element to be soldered in accordance with claim 6, wherein at least a part of the diffusion preventing area is a metal alloy layer formed of alloying gold and nickel at a portion irradiated by laser beams when the laser beams are irradiated on the gold plating layer.

9. The manufacturing method of the element to be soldered in accordance with claim 6, wherein at least a part of the diffusion preventing area is a diffusion layer formed of diffusing a material except gold of the metal alloy on a surface at a portion irradiated by laser beams when the laser beams are irradiated on the metal alloy plating layer.

10. The manufacturing method of the element to be soldered in accordance with claim 6, wherein the diffusion preventing area is a metal alloy layer which is formed of evaporation and removing at least a part of gold and alloying remained gold and nickel.

11. The manufacturing method of the element to be soldered in accordance with claim 6, wherein a removing solution of gold is acted to the gold plating layer or the metal alloy plating layer including gold at a portion including at least an area where the laser beams will be irradiated, before irradiating the laser beams.

12. The manufacturing method of the element to be soldered in accordance with claim 6, wherein a removing solution of gold is acted on the gold plating layer or the metal alloy plating layer including gold at a portion including at least an area where the laser beams were irradiated, after irradiating the laser beams.

13. The manufacturing method of the element to be soldered in accordance with claim 6, wherein the foundation plating layer is a nickel plating layer.

14. The manufacturing method of the element to be soldered in accordance with claim 6, wherein a palladium-nickel alloy plating layer formed on the foundation nickel plating layer.

15. The manufacturing method of the element to be soldered in accordance with claim 6, wherein the metal alloy including gold is a gold-nickel alloy.

16. The manufacturing method of the element to be soldered in accordance with claim 6, wherein the laser beams are irradiated at a portion in the vicinity of the terminal portion.

17. The manufacturing method of the element to be soldered in accordance with claim 6, wherein laser beams in a range from 0.5 to 5 mJ/pulse of the energy per one pulse and in a range from 100 to 2000 $mJ/mm^2$ of the energy per a unit area are used.

18. The manufacturing method of the element to be soldered in accordance with claim 6, wherein laser beams in a range equal to or smaller than 3 mJ/pulse of the energy per one pulse and in a range equal to or smaller than 1200 $mJ/mm^2$ of the energy per a unit area are used.

19. The manufacturing method of the element to be soldered in accordance with claim 6, wherein the laser beams have a wavelength equal to or shorter than 1100 nm.

20. The manufacturing method of the element to be soldered in accordance with claim 6, wherein

the laser beams have a beam spot diameter larger than a predetermined width of the diffusion preventing area necessary for preventing diffusion of melted solder, and

the laser beams are irradiated with sifting a predetermined pitch in a predetermined direction so as to form overlapping portion of adjoining nuggets, and the width of the overlapping portion is wider than a predetermined width necessary for preventing the diffusion of melted solder.

21. The manufacturing method of the element to be soldered in accordance with claim 20, wherein

the element to be soldered is conveyed as a state of semi-finished blank in which a plurality of the elements is arranged at a predetermined pitch on a side of band metal plate; and

the laser beams are irradiated to two sides of the element to be soldered in a section parallel to a conveying direction of the semi-finished blank in a direction having a predetermined angle except 90 degrees with respect to the conveying direction of the semi-finished blank.

22. The manufacturing method of the element to be soldered in accordance with claim 6, wherein the element to be soldered is a contact for a connector, and a contacting portion is formed in the vicinity of an opposite end of the terminal portion.

## EVIDENCE APPENDIX

NONE

## RELATED PROCEEDINGS APPENDIX

NONE